31
~~44.~~ A method according to claim ~~43,~~ 30 wherein the surface relief pattern contains variations in at least one of pitch and amplitude of the corrugations.

32
~~45.~~ A method of fabricating Bragg gratings in the interior of an optical waveguide comprising disposing a silica glass phase grating mask adjacent and a parallel to a photosensitive optical waveguide and applying a single collimating light beam through the phase grating mask to said optical waveguide as a medium, wherein the phase grating mask is configured so as to substantially suppress at least one portion thereof a zero-order diffracted light beam of the light beam which passes through the phase grating mask.

33
~~46.~~ A method according to claim ~~45,~~ 32 wherein the zero-order diffracted light beam is suppressed to less than 5% of the light diffracted by the phase grating mask.

34
~~47.~~ A method according to claim ~~45,~~ 32 wherein plus one and minus one orders of the diffracted light beam are utilized for fabricating the Bragg gratings in the interior of the optical waveguide.

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35
~~48.~~ A method according to claim ~~45,~~ 32 wherein the Bragg gratings are substantially permanently fabricated in the interior of the optical waveguide.

36
~~49.~~ A method according to claim ~~48,~~ 35 wherein the optical waveguide is an optical fiber.

37 ~~50.~~ A method according to claim ~~45~~ 32, wherein the phase grating mask is configured so as to induce different phase in at least two adjacent portions of the light beam which passes through the phase grating mask.

38 ~~51.~~ A method according to claim ~~45~~ 32, wherein the phase grating mask has a surface relief pattern formed thereon.

39 ~~52.~~ A method according to claim ~~48~~ 35, in which the surface relief pattern in cross-section is a square-wave.

40 ~~53.~~ A method according to claim ~~48~~ 35, in which the surface relief pattern in cross-section is a sine wave.

41 ~~54.~~ A method according to claim ~~51~~ 38, wherein the phase grating mask has the surface relief pattern selected to modulate by approximately $\pi+2$ radians the phase of the light beam, wherein

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$$\frac{4\pi(n_{silica}-1)A}{\lambda} = \pi + 2\pi n$$

where A is the amplitude of the surface relief pattern, n = 0, 1, 2, 3, λ is the wavelength of the light used for writing (photoinducing) an index change in the optical medium and n_{silica} is the refractive index of the silica used in the mask at λ.